THE

STRUMOUS ELEMENT

IN THE

ETIOLOGY OF JOINT-DISEASE,

FROM AN

ANALYSIS OF EIGHT HUNDRED AND SIXTY CASES.

BY

V. P. GIBNEY, M. D.,

ASSISTANT SURGEON TO THE HOSPITAL FOR THE RUPTURED AND CRIPPLED, NEW YORK.

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THE STRUMOUS ELEMENT IN THE ETIOLOGY OF JOINT-DISEASE, FROM AN ANALYSIS OF EIGHT HUNDRED AND SIXTY CASES.

My approach to a subject the terms of which are so difficult of a clear definition is attended, I am free to confess, with no little embarrassment. Americans, as a rule, are indisposed to accept with any degree of allowance a mention even of struma or the strumous diathesis. The question of its entity stares me broadly in the face, and a definition based on pathology is sternly demanded. When I see in standard American works on surgery, and in the reports of society proceedings, the significant "so-called" prefixed to struma, or scrofula, whenever the use of the term becomes necessary, I feel disinclined to venture any theories, and consequently shall base what remarks I have to make on purely clinical observation.

I am well aware that many of our older physicians and surgeons hold tenaciously to a continued recognition of the diathesis in question, and I am also aware that some of the best among recent writers on practice and pathology, in this

country and abroad, recognize its existence. I have only to cite such names as those of Rindfleisch, of Ruehle, of Billroth, of Erichsen, of William Adams, of Gross, of Ashurst, of Delafield, and of many others.

A six years' service as *interne* in a hospital unsurpassed in opportunity for clinical observation, enables me to invite discussion at least, not on theories—for I have no special theory to establish—but on some points elicited by a careful analysis of a large number of cases, the records of which are taken from the Hospital for the Ruptured and Crippled. During my long sojourn among the truly afflicted I have had frequent occasion to question and to gravely doubt many a fine-spun theory advanced in current literature. Without any sense of egotism, I take occasion, in this connection, to refer to impressions made on the mind of James Henry Bennett, found in his monograph on "Pulmonary Consumption." He reverts to two years of his early life spent in charge of a scrofulous ward of the Hospital of St. Louis, in Paris, where were eighty young females, from fifteen to twenty years of age, nearly all of whom had glandular swellings, with or without scrofulous disease of the bones, ankles, knees, or elbows. He pathetically closes the paragraph with, "a sad assemblage these poor girls were." It is impossible for a physician to be long connected with a dispensary or hospital in a large city without coming to the conclusion that some vice, either hereditary or acquired, must underlie the constitutions of the vast majority of the poor who seek medical assistance. In one instance, the shape and configuration of the head attract your attention; in another, the peculiar expression of the eye, the hue of the face, the irregularity of the teeth; in another instance, the contour of the chest, the general carriage, etc., etc. It is difficult, in fact, to predicate strumous of one particular type of expression. Some children who are undoubted subjects of this diathesis have light hair, and some have dark hair; the skin in some is almost transparently light, in others it is very dark.

I believe I am safe in stating that all authors, with one or two exceptions, regard as synonymous the adjectives strumous and scrofulous. Æsthetically, I prefer the former, and shall consequently use the term scrofulous as infrequently as possi-

ble. What, then, is meant by the strumous diathesis? While searching for something definite in this connection, I chanced to meet with a lecture on "Phthisis Pulmonalis" by my instructor in pathology, Dr. Francis Delafield;[1] and, as the doctor is not noted for verbosity, I shall take this opportunity of quoting the following paragraph:

"Of scrofula we see so little in this country that it is difficult for us to appreciate the prominent place it holds in the minds of physicians in European countries. It is a condition which is hardly susceptible of a definition, and yet it is not hard to understand what is meant by the term. It means this: when an individual acquires an inflammation of a mucous membrane, of the skin, of the joints, of the bones, of the genito-urinary apparatus, or of almost any part of the body, such an inflammation usually runs an acute course and terminates in resolution, or in suppuration, or in the formation of organized new tissue. But, if the inflammation, instead of doing this, simply reaches a certain point and stays there, and then, instead of resolving or of suppurating merely, goes through a succession of degenerative changes, such an inflammation is said to be scrofulous. The scrofulous inflammations have several well-marked characteristics. They are very slow in their progress; they are very rebellious to treatment; they are accompanied by an extensive cellular infiltration of the inflamed parts, so that when the degenerative changes ensue there is large destruction of tissue. The degeneration which occurs in the products of such a scrofulous inflammation is peculiar in its nature; it is commonly called cheesy degeneration, and consists in the transformation of the products of inflammation into a dry, yellow mass, composed of amorphous granular matter. Examples of this form of inflammation will at once occur to you. Caries of the vertebræ, hip-joint disease, white swelling of the knee-joint, scrofulous orchitis, and enlarged lymphatic glands, are all of frequent occurrence."

This embraces one of the two marked characteristics, "pertinacity," described by Virchow,[2] without reference to the other characteristic, "vulnerability;" it includes the definition of the College of Physicians, "a constitutional disease, resulting either in the deposit of tubercle or in specific forms of inflammation or ulceration,"[3] without entering into the vexed question of "scrofula with tubercle" *versus* scrofula without tubercle. Let me, to include the vulnerability and the age in

[1] *Medical Record*, vol. x., p. 338.

[2] "Die krankhaften Geschwülste, B. ii., H. ii., pp. 587, 603.

[3] "St. George's Hospital Reports," vol. iv., p. 142.

which the cachexia is most frequently observed, quote the definition given by Haward, in a very instructive paper in the fourth volume of "St. George's Hospital Reports," on an "Analysis of One Hundred and Thirty-four Cases of Chronic Bone and Joint Disease." He thinks it should be confined to that diathesis which is so prone to chronic inflammation of all kinds, and frames the following: "Scrofula is a disease of children, which manifests itself by a peculiar vulnerability, and proneness of the subject to chronic inflammations of the mucous membranes and skin, lymphatic system and bones, which inflammations are characterized by great pertinacity, and the products of which have a retrograde tendency."

Concerning the causation of the diathesis, and the development of the cachexia, a discussion at this juncture is unnecessary, as my analysis will bear directly on these two points. Dr. David Prince, of Illinois, has recently contributed some "Considerations in Relation to Diseases of the Joints,"[1] and he speaks of a condition which may be inherited and permanent, acquired and permanent, or acquired and temporary. Now, to that condition, as embodied in the definitions I have already given, I shall for convenience' sake apply the name "strumous," and by the terms of my theme it will be seen that I recognize some such factor in the production of a large proportion at least of diseases of the joints.

The two great theories to-day are traumatism and non-traumatism, and each has warm advocates. Some contend that every case of joint-disease is local, and is produced directly by a fall or other injury; while others contend that falls have very little to do in the causation of such—that the disease is constitutional, and is purely strumous. Some even go so far as to affirm that joint-diseases are always tubercular. Now, it seems to me that there is an immense amount of logomachy crowded into the literature on this subject. To say that a certain disease is traumatic, means to one mind that a fall or injury was the only cause, and to another mind it means that other and more important conditions were present, while the fall served simply to develop the disease in a system already predisposed. My impression is that the most extreme

[1] *American Practitioner*, February, 1877.

of the traumatists believe that, in the vast majority of instances, a predisposition exists, and the fall is only the exciting cause. The question has often been raised, whether a child in perfect health, and with no diathesis or dyscrasia either hereditary or acquired—whether such a child can get Pott's disease or hip-joint disease from an injury, however slight or however severe. Among my cases which I am to analyze, I propose to look carefully for such instances, if they can be found.

I have succeeded in collecting tolerably full notes of eight hundred and sixty cases, and in eight hundred and thirty-two an attempt has been made by the different historians to ascertain the existence or non-existence of an injury, however slight, to account for the disease in every case.

A word or two in reference to falls, and the influence they have on the minds of both laymen and professional men, may not be amiss in this connection. About the first question propounded by the anxious parent when a child with suspected joint-disease is brought to a physician is, "Doctor, do you think it came from a fall?" That question seems paramount to all others. I have often wondered why the maternal instinct did not suggest the all-important question as to what will cure the child. Generally, by the time a physician has been consulted, the history as to traumatism has been thoroughly investigated—the child has been induced, either by fear or by love, to admit the possibility of some fall on the sidewalk, on the ice, or down a flight of stairs. If the unfortunate victim cannot remember such an occurrence, some Argus-eyed neighbor calls in to volunteer testimony on the subject, so that there can be no excuse for a doctor omitting this item in getting a history. When I have been able conscientiously to assure a mother overburdened with responsibility that the disease has not arisen from a fall, the expression of joy and of gladness that often illuminates her face is something truly delightful. I think it will be fair to state that most of the histories, the data from which form the basis of this paper, have been taken by men who have emerged from colleges thoroughly imbued with the idea that traumatism produced a very large proportion of all the chronic arthropathies.

Among joint-diseases I have included caries of the vertebræ, and, consequently, this is included in my analysis. Of the eight hundred and sixty cases, then, I find that in twenty-eight no statement is recorded as to the exciting cause. In three hundred and forty-nine a fall or other injury was found to account for the disease; but, in looking more closely into the histories, I find that some did not develop until a period varying from six to eighteen months after the assigned injury; while, on the other hand, some developed in an incredibly short space of time. For instance, in some cases of caries of the vertebræ, I find that the history states that a fall occurred on a certain date, and on a certain other date, two or three days intervening, a small projecting knuckle was first discovered. I am not referring to fractures of the spine, but simply caries. I have myself ample reason for doubting ninety-seven of these cases, so far as the existence of the recorded exciting cause is concerned. This would leave, then, two hundred and fifty-two undoubtedly traumatic — this term, of course, as I have before intimated, being used advisedly. Twenty-nine per cent. come under this class, or, allowing the ninety-seven doubtful to be included, the percentage then becomes forty and one-half. In my analysis I shall endeavor to show what proportion of these traumatic cases were rendered thus vulnerable by a strumous diathesis or cachexia. In four hundred and eighty-three no cause such as a blow, fall, or other injury, could be ascertained. I have gone over these cases again and again, with much care, and am prepared to state the number wherein a strumous element is found. Just here I wish to express my unreserved thanks to Drs. J. W. Crenshaw and E. F. Horst, two of my associates in the hospital, for their untiring energy in assisting me to complete in tabular form the statistics which I have to record. The labor requisite for such an undertaking can only be fully appreciated by those who have had a personal experience. I have also received material aid from Dr. James Knight, in whose service as Resident Physician and Surgeon the whole number of cases have been observed. He has suggested many an interesting point, which I have taken pleasure in investigating by the light of clinical experience.

Before proceeding to the question of diathesis, I shall present some figures bearing on the sex, inasmuch as many authors have based arguments on the preponderance of one or the other, to sustain one or the other of the two theories. To give more weight to the argument, I have taken a larger number of cases, which includes the whole number found on the records of the Hospital, both in the in and out door departments.

TABLE I.—Showing the Whole Number of Joint-Diseases, arranged with Reference to Sex.

FROM 1864 TO 1877.	Whole Number.	Males.		Females.	
		Number.	Per Cent.	Number.	Per Cent.
Caries of vertebræ	2,455	1,329	54	1,126	46
Hip-disease	1,818	909	50	909	50
Synovitis	1,188	670	56½	518	43½
Totals	5,461	2,908	53¼	2,553	46¾

From the above table it will be seen that, in five thousand four hundred and sixty-one cases of disease affecting the various joints, the male sex were represented two thousand nine hundred and eight times, and the female two thousand five hundred and fifty-three.

Dr. Louis Bauer,[1] among others who oppose bitterly the strumous theory, argues, with the flourish, "needs no special comment," from the fact that boys are more subject to joint-diseases than are girls, that, consequently, the causation must be found in traumatism and not in a strumous diathesis. Boys are stronger and more robust, engage more in out-of-door exercises, which expose them to injuries, while girls lead more of an in-door life, are more sedentary in their habits of life, and are consequently more exposed to a strumous diathesis.

From such reasoning he adduces what may strike some, who are not furnished with facts, as a powerful argument. I

[1] "Orthopædic Surgery," pp. 232, 233.

have not time here to refer even to the articular diseases whose cause is attributed to a fall from a chair, a bed, to a strain while in bed, or a twist or turn on the floor; nor have I time to cite instances in families where little girls are considered by all who know them as perfect romps, while the delicate boy develops the disease in question; nor have I time to enter into a discussion as to the causation of struma, especially desirable in this connection, as the author just quoted regards struma and tubercle as identical. It would be interesting to learn how many children, whether girls or boys, acquire tubercle or struma *de novo*, by a sedentary life and confinement to the house. The table I have just given, so far as numbers are concerned, does not furnish an overwhelming sex argument. I have seen a great many paralytic children, have examined them with much care at various stages of the paralysis, and many have been under my observation for several years. I have seen them fall often, and frequently get severe bruises; and I have seen the injuries neglected time and again. No class of children, I presume, fall and tumble about more than these unfortunates. To see an arthropathy and an infantile paralysis associated in the same patient is with me a rarity; and, where such have been noted, I have been particular to make special record of the case. This point is so interesting, that I have collected a few figures which enable me to speak with some degree of confidence. During the past six years 845[1] cases of spinal paralysis in children under fourteen years of age have been examined at the Hospital, and of that number I am able to find four complicated with joint-disease. In three the joint-disease followed the paralysis, in one it preceded the paralytic attack. This one I have already reported in the *Philadelphia Medical Times*.[2]

Age is a predisposing cause—that is, the disease occurs more frequently at certain periods of life—and from this fact

[1] In the paper, as read, I had one thousand four hundred and forty cases, embracing a period of fourteen years; but, as I am not familiar with those recorded prior to 1871, I have concluded to refer only to those I have had an opportunity of myself observing.

[2] December 9, 1876, p. 102.

arguments are constructed to militate against a strumous diathesis in the etiology. As in Table I., I have included a larger number, the statistics of which are perfectly reliable, and will give more weight to whatever deductions it may be desirable to draw therefrom.

TABLE II.—Showing the Relative Ages of 5,461 *Cases of Joint-Disease.*

FROM 1864 TO 1877.	Whole Number.	Under 14 Yrs.		From 14 to 21.		Over 21.	
		Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Caries of vertebræ	2,455	2,158	87⅞	180	7⅓	117	4⅞
Hip-disease	1,818	1,602	88¼	168	9¼	48	2½
Synovitis	1,188	851	71⅝	125	10⅝	212	17½
Totals	5,461	4,611	84½	473	8⅔	377	6⅞

It will be seen from the above that eighty-four and one-half per cent. of the diseases of the joints occur prior to the fourteenth year. As bearing on disputed points, I have added another table of eight hundred and sixty cases, which will show the number under one year, under four years, etc.:

TABLE III.—Showing the Relative Ages of 860 *Cases of Joint-Disease.*

LOCALITY.	Whole Number.	To 1 Year	Per Cent.	To 4 Years.	Per Cent.	4 to 14 Years.	Per Cent.	Over 14 Yrs.	Per Cent.
Vertebræ	296	10	3½	195	65⅞	85	28⅞	16	5½
Hip	360	4	1⅛	139	38⅛	215	59⅞	6	1⅝
Knee	140	7	5	71	50⅞	65	46½	4	2⅞
Ankle	48	3	6¼	27	56¼	20	41⅝	1	2
Elbow	6	2	33¼	4	66⅔	2	33¼	..	..
Shoulder	5	1	20	3	60	2	40	..	..
Wrist	5	..	..	3	60	2	40	..	..
Totals	860	27	3¼	442	51¼	391	45½	27	3¼

Before referring to the figures as shown by the above table, and as contributing to the subject of purely infantile disease of the joints, I have to state that in three cases the disease developed prior to the sixth month. Recent writers, I believe, make but very little reference to the disease occurring at so early a period of life. Coulson[1] states that Albers mentions three cases of congenital hip-disease, while Morgagni[2] observed the disease in an infant only a few months old. The youngest case among those I have analyzed was one of synovitis of the shoulder-joint in a female child two weeks of age.

In the discussion which followed the reading of this paper Dr. Jacobi raised the question as to why children were more frequently diseased than adults, and proceeded to apply the fact, that everything which had a rapid physiological development was apt to become pathological, to bone and joint diseases especially, claiming that those parts of a bone which had a rapid circulation of blood were the most frequently diseased. The upper portion of the femur was better supplied with blood-vessels than the lower portion, and it was a fact that, when we had to deal with disease of the bone in young children, the epiphysis was almost always the seat of the inflammation. He referred to the anatomical fact, also, that when man was born there was only a single epiphysis in which there was a single point of ossification, and that was the lower epiphysis of the os femoris—all the others being soft tissues. In the same degree that the epiphysis ossified, the doctor continued, the tendency to inflammation and suppuration of the bone generally would be diminished. The remarks of both Dr. Hamilton and Dr. Jacobi on the different periods of life at which struma manifests itself, the different tissues affected, etc., were very interesting and highly instructive. As I have not space to incorporate the discussion fully into this paper, I shall refer my readers to a *verbatim* report of the same to be found in the *Medical Record* for April 28, 1877. It will be seen from Table III. that three and one-fourth per cent. of the cases of joint-disease occurred prior

[1] "On the Hip-Joint," etc., London, 1841, p. 61.

[2] "De Sedibus et Causis Morborum," epist. lvi.

to the beginning of the second year, while fifty-one and one-half per cent. developed prior to the fourth year. When it is remembered that a child under that age does not venture far from its nurse or mother, and is not so much exposed to the influence of traumatism as the child over four years of age, and when we take into account the theories just referred to, i. e., the one Dr. Jacobi referred to in the discussion, the non-strumous view, I think, fades into comparative insignificance. I shall not dwell specially on the different percentages in the table, but refer my readers to any figures thus tabulated in which they may feel interested.

Diathesis.—I shall now pass to the question of diathesis, and I have subdivided this into hereditary and acquired, the exact meaning of each to be developed by the diseases which I have found actually existing, and which may account for any morbid condition or dyscrasia capable of producing the lesions under consideration. To present this phase of my theme in a more tangible form, I shall give tables of caries of the vertebræ, of hip-disease, and of synovitis, from which to draw such conclusions as the figures therein shall warrant.

TABLE IV.—Giving 185 *Cases of Caries of the Vertebræ analyzed with Reference to Hereditary and* 209 *with Reference to an Acquired Diathesis.*

EXCITING CAUSE.	Traumatic.	Non-traumatic.	Not sought.	Total.
Number analyzed	77	106	2	185
Percentage of cases where heredity was found	71	80½	..	76½
Percentage of hereditary diseases as found in father.	35	35¾	..	35½
Percentage of hereditary diseases as found in mother.	41½	35¾	50	38½
Percentage of hereditary diseases as found in both parents	7¾	7½	..	31¾
Percentage of hereditary diseases as found in other children in family	31½	33	50	15¾
Percentage of hereditary diseases as found both in parents and children	20¾	14½	..	16¾
Number analyzed	72	131	6	209
Percentage of cases where cause was found in acquired diathesis	33½	52¾	33½	45½
Percentage of cases where hereditary and acquired diathesis was found	23¾	2¾	..	22½

A word of explanation regarding the construction of the above table seems pertinent. My object in making the general division of "traumatic," "non-traumatic," and "not sought," was to bring out as prominently as possible the percentage of those cases supposably due to traumatism in which some hereditary or acquired conditions existed, and which would render an injury, however slight, effective in inducing the disease. Without entering into the old discussions of heredity or transmission of disease from generation to generation, I wish to affirm my belief in the theory that a disease or diathesis in the parent may be transmitted to the child, if not through the same tissue and by the same manifestations, at least through different tissues, preserving the factors, chronicity and pertinacity. Let me illustrate. Much has been said about spinal caries being essentially a tubercular disease, and men whose experience and judgment must be profoundly respected hold now tenaciously to this theory. They find often a tubercular family history, probably running through two or three generations; and where they do not find this history, they conclude that such a diathesis must exist and has escaped their search. The opponents of this theory claim that no tubercular deposit has been found in the vertebræ thus carious, and, furthermore, in many instances no tubercular deposits can be found in the lungs or other organs, and on these negative facts they stoutly deny any tubercular element in the etiology. Now, it seems to me that no question in general pathology rests on a firmer basis than this: that a tubercular diathesis, or any diathesis, in the parent may be and is transmitted to the child, and manifests itself not in the organs through which the diathesis manifests itself in the parent, but through other organs and tissues. The type of the lesion may change in many particulars. The diathesis may be masked, and good hygiene and a prophylactic course of treatment may prevent its development in any tangible form, yet there remains the vulnerability. Those who have had occasion to study the alcoholic diathesis find transmitted lesions in the nervous system. How frequently are we baffled in our efforts to relieve a seemingly trifling disease in a child, and how zealously do we resort to drug after drug, when,

finally, our attention is called to a suspicion of a syphilitic diathesis in the parents, we begin our anti-syphilitic medication, and a cure speedily follows! In one of the cases included in my analysis this fact is strikingly illustrated:

A little girl, aged seven years, was brought to the outdoor department for a synovitis of the right knee. There were found the usual symptoms and signs accompanying a subacute arthritis, and, furthermore, the child seemed in an excellent condition of health. The mother had traced the disease to a fall some three months prior to her first visit to the Hospital, which was during the early part of 1876. The appearance of the mother, it is true, aroused my suspicion as to the existence of syphilis in herself, yet I could at that time see no connection between her disease and the one for which she brought the child. In fact, I did not pursue an investigation even, but proceeded to treat the child after the usual manner. I made slow progress, and after a few months the mother grew naturally dissatisfied and discontinued her visits. During the early part of 1877 she returned, after having visited in turn other dispensaries. I found the child still lame, and the knee in about the same condition as when I last saw the case. I instituted the same treatment, and proceeded to keep full notes of the progress of the case. After two months' observation I found no improvement. I then obtained an accurate history of the family, and I found that this child had been born subsequent to the development of syphilis in both father and mother, and I obtained a history of hereditary syphilitic manifestations in the earlier years of the child's life. I discarded all former treatment, and ordered potassium iodide, in ten-grain doses, thrice daily. Within ten days the improvement was most decided. In less than a month a perfect cure was accomplished, and up to the present time no relapse has occurred.

Under hereditary diathesis I have included the following: Consumption, rheumatism, syphilis, insanity, and epilepsy, strumous diseases as shown in the lymphatics, or bones and joints.

Where it was possible, I have noted the occurrence of any of these diseases in any of the members of the father's family,

of the mother's family, and where they occur on both sides of the house. Still further, I have examined closely in a certain proportion of the family histories of my cases, i. e., I have ascertained the existence or non-existence of any of the recognized strumous diseases in other members of the family. For instance, if I have found, in tracing out a full history of a case, that several children have been still-born without any known pelvic or uterine cause in the mother, that one or two have died of "water on the brain," that several have died of cholera infantum, or that one or two have chronic bone or joint disease, I have observed the fact under the column headed "family." This has seemed to me circumstantial evidence that some hereditary taint has been transmitted either directly or by atavism, direct evidence of which taint I have failed to get in obtaining my history. I have this observation to make while speaking of histories: At a dispensary the father scarcely ever appears. The child is usually brought by the mother, and from her alone, stupid as she sometimes is, the family history on both sides of the house must be obtained. This fact makes it necessary to admit circumstantial evidence in scientific investigations.

The percentage of cases where paternal heredity was possible, where maternal heredity was possible, and where both were possible, I have thought best to give, although seemingly unimportant, separately. I have done this more with a view of studying the natural histories of the cases respectively at some future time, especially as many are still under observation. The point, then, to be brief, is this: Does a case of hip-disease, for instance, where there is a tuberculous paternal family history, act differently from one where there is a tuberculous maternal family history, other conditions, of course, being equal? To pursue the investigation still further: Does a case of hip-disease with tubercular diathesis in both father and mother prove any more serious and rebellious to treatment than one with the tubercular element confined to only one parent?

In the columns devoted to the acquired diathesis I have included such cases only whose inception was observed in the wake of some one of the exanthemata or exhausting diseases

of childhood: rachitis and the attending deviations from a normal nutrition; a severe dentition; exhaustion and malnutrition attendant upon strumous, skin, eye, and lymphatic diseases; a prolonged cholera infantum, from whatever cause produced; pertussis, severe in character and disappearing after a long convalescence; rubeola, and scarlatina, and varicella, and vaccinia, and variola, with their respective sequences and consequent debilitating influences; bad hygiene, etc., etc. —all these I have taken into account in searching for an acquired diathesis or cachexia. When I have been able to trace a causative relationship between any of these influences and the joint-disease, I have so noted in my tables. Of course, a certain proportion of joint-diseases occurred prior to the development of any of these diseases which affected seriously the nutrition of the patient and were necessarily aggravated by such an intercurrence. Still, I have not included these in my table, but shall probably be able to state in numbers in what proportion of instances such observation was made. A certain number were not observed with reference to this point, and the percentage has not been given. Where both hereditary influences and an acquired diathesis existed in combination, note has been made and the percentage given.

To make the analysis more complete, it was my purpose to give the wards of the city, and hygienic surroundings, social and otherwise; but I was met by the following difficulties: The poor of New York are constantly shifting from place to place. At one time good quarters are at their command, and at another time the vilest hovels serve as habitations. The point of value would be to find the kind of house and the locality at the time the disease was developed, and not where the patients lived when application was made for treatment. In all histories and records this fact is alone obtained. Without any authentic statistics, then, I will venture to assert that fully seventy-five per cent. of the cases included in my analysis occurred in the children of the poor; that they were under poor hygienic influences when the disease was developed, and that their vitality, as a consequence, was far below the normal standard.

With reference to the relative frequency of the regions

involved in the carious process, I found that in four instances the cervical vertebræ were alone affected, in one hundred and forty-eight the dorsal vertebræ alone, and in thirty-seven the lumbar.

The disease involved the cervico-dorsal region in thirty-seven instances, and the dorso-lumbar in seventy-two instances. Two cases of dorsal caries were complicated with synovitis of the left elbow, two with synovitis of the right knee, and two with synovitis of the left ankle. One case of lumbar caries was complicated with disease of the left ankle. In one case caries of the cervico-dorsal and of the dorso-lumbar vertebræ had the additional lesion of synovitis of the left knee.

To revert to Table IV., it will be observed that thirty-three cases traumatic were not investigated with reference to any hereditary influences. This number I have consequently deducted from the one hundred and ten supposed to have traumatism as the exciting cause. I then have seventy-seven, and of this number I found that twenty-three gave, on my first impression, evidence of being free from any hereditary complications, i. e., I found that an attempt had been made by those who recorded the notes to ascertain the existence of any hereditary diseases in the history of either parent, and had failed to find any such disease or diathesis.

The twenty-three seemed to me worthy of especial investigation, and accordingly I have endeavored to study them closely, and am prepared to speak with a certain degree of scientific exactness.

My object is to ascertain the exact number of cases of undoubted Pott's disease of which I can predicate no hereditary predisposition, and no diathesis or cachexia induced by any of those diseases of childhood which authors recognize as sometimes causing struma.

Of the twenty-three cases traumatic, then, I have to state that in five a poor hygiene existed prior to and at the time of the development of the spinal caries. Two or three of these five cases gave a history of doubtful traumatism, so that I feel justified in excluding the number influenced by a wretched hygiene. In eight instances an exciting cause was found in some one of the exanthemata or cachexiæ induced by disease.

Eight were totally unreliable, and hence excluded. Two remain, and I must say that I do not feel satisfied about either being absolutely clear as to record. From one the history was obtained, and he did not know of any diseases on either side of the house. The full text of this case I shall give, however, in the general summary. The second is reported on the case-book as having been always healthy prior to the injury from which his disease developed, and as being free from any hereditary taint on father's or mother's side. The history was taken by myself in the early part of my professional career, and at that time I sought only for consumption in the family. Had I the opportunity of taking the same history to-day, I am sure that I should investigate more points, and obtain both positive and negative bearing on the subject under consideration. This case I shall also give in another connection.

Among the one hundred and sixty-nine cases non-traumatic, sixty-three were not investigated with reference to heredity, and hence I took one hundred and six for analysis. Of this number twenty-one were partially negative and incomplete, seemingly free from any influence of hereditary diathesis. On closer analysis, however, in nine of these a cause was found in an acquired diathesis, i. e., the diathesis was induced by diseases of infancy. In eight the histories, from their brevity and omission of important points, were totally unreliable. In three a wretched hygiene, in the fullest sense of the term, was found. One is left, then, with fair evidence of a clear record; yet I doubt whether this case even would satisfy the believers in a strictly strumous origin for joint-diseases. Further on I shall give a full history, and leave my readers to judge for themselves.

Should any one attempt a summing up of the columns in my tables, a tally will not be found, by reason of the manner of construction. This is briefly as follows: I found first the number of cases where the father's family alone gave some one of the transmissible or hereditary diseases; the same in the mother's family; the number where both families were represented; the number of cases in which evidence of an overlooked hereditary diathesis was found in other children

of the family, i. e., where hydrocephalus, a number of still-births, etc., had occurred; the number where both family and either father or mother gave evidence of hereditary disease. These numbers, added together, gave the number analyzed. Then I added the number found in the column "both parents" to that in "father" and in "mother." Furthermore, to these same were added the respective numbers of instances, as found in the column "both parents and children." To the original number, as found in the column "other children in family," was added the number found in the column immediately following. The percentages were then taken and tabulated.

Of the hereditary diseases embraced in the table, I have to observe that, in the paternal family, consumption was found in twenty-seven instances, in the maternal thirty-six; rheumatism—i. e., recurring acute, or chronic rheumatism—was found in paternal family twelve times, maternal fourteen; scrofulous diseases of unquestioned type, in paternal five times, maternal eleven; syphilis contracted prior to the conception of the offspring, in father five times, in mother once; habitual drunkenness, or alcoholism, preferably still, the alcoholic diathesis, in father seven times, in mother three times; insanity, in father twice, in mother once.

My own interest has often been directed to the influence the exanthemata have in the development of joint-diseases, and I have accordingly sought to ascertain the statistics. Of the two hundred and nine cases of spinal caries investigated with reference to this point, I find that the disease was induced by pertussis in fifteen cases, five of these giving an hereditary diathesis, three giving none, and in seven the question of heredity was not investigated. This fact has been observed by other writers, and I am happy to add the evidence of statistics.

Rubeola was found as the exciting cause in eighteen cases, and of this number hereditary influences were found in eight, not found in nine, and not sought in one. Scarlatina induced the disease four times, and of this number hereditary disease was found once, not found once, and not sought twice. Rachitis was found as the cause in eight cases, of which heredity

was found in four, not found in two, and not sought in two. Cholera infantum was noted as the cause in five instances, all of which gave hereditary disease in the family. Vaccinia was noted as the exciting cause in three, and two of this number gave hereditary disease in the family, while in one it was not sought. Varicella, cerebro-spinal meningitis, pneumonia, intermittent fever, and rheumatism, were found as exciting cause in one instance respectively.

I now pass to the cases of hip-disease, and have tabulated two hundred and sixty-five analyzed with reference to heredity, and two hundred and seventy-one with reference to an acquired diathesis.

TABLE V.—Giving 265 Cases of Hip-Disease analyzed with Reference to Hereditary, and 271 with Reference to an Acquired Diathesis.

	Traumatic.	Non-traumatic.	Total.
Number analyzed	130	142	272
Percentage of cases where heredity was found	64¾	58½	60¼
Percentage of hereditary diseases as found in father	30¾	28¾	30¼
Percentage of hereditary diseases as found in mother	31½	26¾	29
Percentage of hereditary diseases as found in both parents	9¼	4¼	6¾
Percentage of hereditary diseases as found in other children in family	29¾	21¾	25¾
Percentage of hereditary diseases as found in both parents and children	15½	14	15
Number analyzed	122	149	271
Percentage of cases where cause was found in acquired diathesis	9¾	26¼	18¾
Percentage of cases where hereditary and acquired diatheses were found	4¾	14	10

This table is constructed in the same manner as Table IV., and my remarks shall be directed chiefly to those cases in which an apparent effort was made by the historian to trace any hereditary diathesis, and negative results were recorded. The same remarks concerning the mode of taking the histories, and the parent from whom such history was obtained, as were

made under the heading of "spinal diseases," are applicable in this connection.

The whole number, then, of cases traumatic and non-traumatic which I have thus subjected to a more rigid analysis—such an analysis as science demands—is one hundred and six. I find the history totally unreliable in sixty-five instances, an exciting cause among the exanthemata in fifteen, a bad hygiene in connection with an unreliable history in twelve, a wretched hygiene in two, and in nine there is no evidence of an acquired diathesis having been sought by the historian.

This narrows down to *two cases* with a presumable *absolutely clear record*. One of these, on admission, from the history during her stay as in-patient, and under observation subsequently as an out-patient, induced my predecessor in the hospital, Dr. H. E. Handerson, a very competent observer and thoroughly intelligent physician, to gravely doubt the existence of any hip-disease at all, and such doubts are expressed on his notes. I myself had an opportunity of observing the case, and saw no positive evidence of the disease in question. The diagnosis was coxo-femoral neuralgia.

The *remaining case* was such a typical one of acute synovitis of the coxo-femoral articulation, that in my summary I shall report it in full. I would premise, however, that I entertain some doubt as to the correctness of the history, as given by the grandmother who placed it in the hospital.

Of the 265 cases in the table observed as to heredity, consumption was noted as occurring in the father's family fifty-three times, in the mother's fifty-six; rheumatism, or the rheumic diathesis, in the father's fourteen times, in the mother's eight; diseases unquestionably strumous, in the father's ten, in the mother's eighteen; syphilis, in father three, mother seven; the alcoholic diathesis, in father one, mother one; and insanity, in the mother once.

Pertussis stood in a causative relationship to hip-disease eight times, hereditary disease being found in four, not found in three, and not sought in one. Scarlatina was the cause in eight instances, two giving an hereditary diathesis, four giving none, and in two this was not sought. Measles induced the disease in five cases, one having hereditary disease in the his-

tory, three being free from the influence of heredity, and in one a diathesis was not sought. Intermittent fever seemed to develop the disease twice, typhoid fever once, and cerebro-spinal meningitis once.

The next table bears upon synovitis of the knee, and gives in analysis 107 cases.

TABLE VI.—Giving 107 *Cases of Knee-Joint Disease Analyzed with Reference to an Hereditary, and* 103 *with Reference to an Acquired Diathesis.*

	Traumatic.	Non-traumatic.	Total.
Number analyzed	53	54	107
Percentage of cases where heredity was found	71⅝	60½	66⅓
Percentage of hereditary diseases as found in father	22¾	26	24⅓
Percentage of hereditary diseases as found in mother	20¾	37	29
Percentage of hereditary diseases as found in both parents	5⅝	5½	5½
Percentage of hereditary diseases as found in other children in family	28½	20½	24⅓
Percentage of hereditary diseases as found both in parents and children	11½	13	12
Number analyzed	44	59	103
Percentage of cases where cause was found in acquired diathesis	18	42½	33
Percentage of cases where hereditary and acquired diatheses were found	11⅓	23⅝	18⅓

Thirty-six cases apparently clear from hereditary influences have been submitted to a more thorough analysis, which gives the following results:

The history was altogether unreliable in twelve; an exanthem was found to account for the development of the disease in seven, a bad hygiene, together with an unreliable history, in four, bad hygiene in three, and in ten no acquired diathesis was sought. So that, among the knee-joint diseases, *not a single case* was found with an *absolutely clear record*. They were all presumably strumous.

One hundred and three analyzed with reference to an ac-

quired diathesis, actually found to have induced the disease, give the following results:

Pertussis was the cause in four cases, in two of which an hereditary diathesis was found, and in two nothing was found; scarlatina was the cause of the disease four times, in three of which heredity was found, and in one not found; rubeola was the cause of one, cerebro-spinal meningitis of one, and acute necrosis of two.

Thirty-two cases of disease of the ankle-joint are analyzed with reference to an hereditary, and thirty-one with reference to an acquired diathesis, a tabular form of which is herewith given.

TABLE VII.—Giving 32 *Cases of Ankle-Joint Disease analyzed with Reference to Hereditary, and* 31 *with Reference to an Acquired Diathesis.*

	Traumatic.	Non-traumatic.	Total.
Number analyzed	15	17	32
Percentage of cases where heredity was found	80	93⅛	81¼
Percentage of hereditary diseases as found in father	26⅔	35⅛	31¼
Percentage of hereditary diseases as found in mother	46⅔	27⅜	31¼
Percentage of hereditary diseases as found in both parents	..	..	..
Percentage of hereditary diseases as found in other children in family	60	53	56¼
Percentage of hereditary diseases as found both in parents and children	40	23½	31¼
Number analyzed	15	16	31
Percentage of cases where cause was found in acquired diathesis	26⅔	31¼	29
Percentage of cases where hereditary and acquired diatheses were found	20	12½	16¼

Five cases seemingly free from any hereditary taint, on being subjected to a closer analysis, were found imperfectly reported, and consequently unreliable in two instances; a poor hygiene was found in the history of one, measles was found to have caused one, and the remaining one was incorrectly di-

agnosticated. The history of the case, the progress of the disease, and the successful termination, make it undoubtedly one of periarthritis. It shall be reported, however, and the legitimate conclusions drawn therefrom.

Of the thirty-two aforementioned, consumption was found in the father's family eight times, in the mother's five; rheumatism was found in the father's once; diseases scrofulous in nature were found in the father once, in the mother three times.

Scarlatina stood as exciting cause in one case of synovitis of the ankle, pneumonia in two cases, varicella in one, and rubeola in one. The latter two gave a history of hereditary disease.

The remaining joints present nothing of sufficient interest to warrant a discussion in detail, and the following table I shall present as a kind of summary.

TABLE VIII.—Showing the Number of Cases of Joint-Disease Induced by the Diseases of Childhood.

LOCALITY.	Cases analyzed.	Pertussis.	Rubeola.	Scarlatina.	Cholera Infantum.	Rachitis.	Vaccinia.	Cerebro-Spinal Meningitis.	Pneumonia.	Intermittent Fever.	Varicella.	Typhoid Fever.
Spine.....	209	15	18	4	5	4	3	1	1	1	1	..
Hip.....	271	8	5	8	..	..	..	1	..	2	..	1
Knee.....	103	4	1	4	..	..	..	1	..	..	..	..
Ankle.....	31	..	1	1	..	..	..	..	2	..	1	..
Total.....	614	27	25	17	5	4	3	3	3	3	2	1

NOTE.—Rheumatism in one case of hip-disease, and acute necrosis in two cases of synovitis of the knee.

To present in review the statistical work just dwelt upon, I have arranged the following:

TABLE IX.—Giving a Resumé of Tables IV., V., VI., and VII.

	Spine.	Hip.	Knee.	Ankle.	Total.
Number analyzed	185	272	107	32	596
Percentage of cases where heredity was found	76¼	60⅛	66⅛	81¼	68
Percentage of hereditary diseases as found in father	35¼	30⅐	24⅛	31¼	30½
Percentage of hereditary diseases as found in mother	38½	29	29	31¼	32
Percentage of hereditary diseases as found in both parents	31⅜	6⅜	5½	...	6½
Percentage of hereditary diseases as found in other children in family	15⅜	25⅜	24⅛	56¼	29
Percentage of hereditary diseases as found both in parents and children	16⅜	15	12	31¼	16
Number analyzed	209	271	103	31	614
Percentage of cases where cause was found in acquired diathesis	45½	18⅜	33	29	30⅛
Percentage of cases where hereditary and acquired diatheses were found	22½	10	18⅛	16¼	16

Can Joint-Disease occur in a Non-strumous Child?—At the meeting of the New York County Medical Society, March 26, 1877, in the discussion which followed the reading of this paper, Dr. Lewis A. Sayre propounded the above question, or what I take to be its equivalent, viz.: "Can Pott's disease of the spine, or hip-joint disease, develop from an injury in a child in perfect health and absolutely free from any hereditary diathesis?" The question was propounded for Dr. Frank Hamilton, who had just spoken, or myself, to answer. Dr. Hamilton answered in the affirmative. A remark of no less a distinguished surgeon than Prof. S. D. Gross was given by Dr. Sayre, which was that hip-joint disease could not occur in any man, woman, or child, unless a tuberculous diathesis be present. Such a statement, I confess, caused some surprise, and induced me to conduct a more thorough analysis of such cases as I had hastily recorded in my paper, then incomplete, wherein "nothing found" was specified. As such cases have been given in analysis under their respective sub-

divisions, viz., under caries of the vertebræ, hip-disease, synovitis of the knee, and synovitis of the ankle, in accordance with a statement already made, I propose to detail the cases in this connection.

Case I.—Joseph Blum, aged twenty, native of England, was referred to the hospital by Dr. Frank Hamilton, on December 28, 1876. From the patient I learned that he was a race-rider by vocation; that his family history was good, the father, a brother, and a sister, being artists in the dramatic profession, of excellent physical development, and always enjoying good health. (I find that I have no note concerning the health of the mother, or any history of her own family at all. My impression, at this writing, is that I did not investigate that branch of the family, but simply rested satisfied with "family history good." I have further to observe, that my mind, at the time of taking the history, was intently fixed upon the plaster-of-Paris jacket he claimed to have worn in the early part of 1873, and *special* attention was not given to the family history.) He reported himself as always enjoying excellent health prior to a fall from a horse in August, 1872. This fall was very severe, doing great violence to his cerebro-spinal system. He was taken up insensible, and borne to the Royal Infirmary, in Liverpool. Says that partial consciousness returned in about three days; that there was complete paralysis of motion in both lower extremities, with almost complete loss of sensation; that the right upper extremity was paralyzed, and likewise very painful, while the left was incompletely paralyzed; that he had violent headache; that his fæces passed involuntarily, while the urine, he thinks, was retained. He is positive in stating that at this time there was no deformity whatever of the spine. At the end of two months he began to use his legs feebly, and at the end of four months—the beginning of 1873—could with great difficulty stand alone.

At this time, he avers, a Dr. Barnet, of the Infirmary, suspended him by the shoulders and applied a plaster-of-Paris jacket from the axillæ to the pelvis; was then taken down and kept extended on the table until the plaster had hardened. He claims that he did not walk immediately afterward, but was placed in bed for nine days, at the end of which

time he was "all swelled," making a removal of the plaster necessary. Four or five days later a Dr. Armstrong came from London, and reapplied the plaster jacket, after "his own plan;" which was, to anæsthetize the patient, extend him on a table, and then lay strips of pasteboard longitudinally along the body and apply the plaster thereover. This seems to have been comfortable and to have met the indications, and was worn for three months, he still keeping his bed, however, on account of inability to walk, for nine or ten weeks after the application. When the plaster was applied there was no knuckle or deformity of the spine, he says; and from this statement, and from the fact that he was so long regaining the use of his limbs, I take it that the treatment then adopted was not for supposed spinal caries, but possibly for a suspected fracture (I use the term "suspected" because of the presumable absence of any deformity, which certainly would have come to the knowledge of the patient), or for a weakened condition of the spinal column dependent on the intra-spinal lesion.

This jacket was removed when it had crumbled much, and, the patient having gone to his home, a third one was not applied. He felt the need of support for his head, however, and procured a steel brace with a head-support. At this time he feels quite sure there was no deformity. This brace was worn a short while, but was thrown off on account of the pain caused thereby. A kind of wheel crutch was then resorted to, and after a short while a slight deformity was observed in the cervico-dorsal region. This has slowly and steadily increased in size, and now, at date of present observation, there is a great prominence, including all the dorsal vertebræ, measuring from highest point to the vertical axis two and three-quarter inches. There is also marked spinal tenderness in dorso-lumbar region, with hyperæsthesia, shooting pain, uneasiness in any posture for any length of time, etc., etc.

A single suggestion with regard to the case just reported, and I pass to the next. That the cerebro-spinal disease, or intra-spinal disease, was due to traumatism, I have no doubt whatever; but, in the absence of data which it was impossible

to get from the patient himself, I do doubt the relationship of cause and effect between the severe fall and the caries of the vertebræ. The severity of the nervous disease seems, to my mind, competent to have produced or developed in the boy a strumous diathesis, which rendered him vulnerable; and his prolonged convalescence, taken in connection with the unsteadiness and feebleness of his limbs, must have subjected him to frequent falls, which may have caused the caries in the subject thus cachectic.

Case II.—James S., aged thirteen, of Irish parentage, was admitted to the hospital as an in-patient, September 4, 1871. He lives at Yorktown, in a good location, while the house is large, and, from all accounts, well ventilated. (These notes were all taken at the date of admission.) The mother is strong and hearty, as is likewise the father, and both give good family histories. They have eight children, all of whom are in good health. The only disease the boy has had is rubeola (when, not stated). Was thrown from a sledge about eight months ago, and run over, though no serious results were noticed immediately — in fact, not for a month thereafter; then, however, he began to complain of pains in the side, abdomen, and along the course of the spinal nerves generally. Before a great while a small knuckle was found projecting in the spinal column. His condition on admission was that of a healthy-looking, well-nourished boy. He walked freely, yet with considerable stiffness of the spine, and with strong inclination to rest hand upon the left thigh. A perceptible prominence of the spinous processes of the eighth and ninth dorsal vertebræ was observed, and so noted. While under treatment, he experienced an attack of facial erysipelas and an acute pleurisy.

The disease for which he came under treatment was arrested, and no abscess formed. He remained under observation until October 19, 1872, when he was discharged relieved.

The only comment I have to make on this case is what I have already made when speaking of the same case on page 19, viz., that, in taking the history, it was my custom then to ask for consumption only, not pushing the investigation to

any great extent; and the absence of any note concerning the date and sequelæ of rubeola makes the history, to my mind, to a certain extent unreliable.

Case III.—John M., aged five years, born in New York; mother Irish; father Canadian, aged thirty-three, and in good health. The mother is healthy, and has four other children, who are, and always have been, perfectly healthy. Date of admission to the hospital, September 10, 1874. Residence, 84 Laight Street (hygienic surroundings, etc., not specified). The boy has never been vaccinated, and has had none of the exanthemata. Has never met with any accident since his second year, when he fell into a tub of lime-water, which did not seem to affect him permanently. For three months he has been unable to stoop without pain, and has had other symptoms pointing to some lesion of the spinal column.

His complexion is sallow, eyes gray, and hair light; tongue slightly furred. He is tolerably well nourished; pulse 96, respiration 24, temperature 99¾°. Stands with body bent forward a little, and stoops with spinal column held preternaturally stiff. The motion at the hip-joints is unimpaired. Physical examination of the thorax is attended with negative results. Spinal column shows loss of natural curve below cervical region, with slight antero-posterior curvature from the first dorsal to the last lumbar, deviating likewise to the right side. *No spinous process* is projecting beyond the others, though there is a suspicious feebleness at last dorsal and first lumbar. The nates are normal in contour. There is a small patch of eczema over right parietal bone, and the submaxillary glands on both sides are enlarged. A diagnosis of caries of the vertebræ was made, and a brace was applied. The treatment was supplemented by an alternative tonic.—Nothing worthy of note occurred until October 25th, when he was vaccinated from the scab which came from a child supposed to be in perfect health. (A number of other children under observation were vaccinated at the same time from the same source, and the results of nearly all were excellent.) November 1st, were symptoms of cellulitis in the vaccinated arm, and over the site of the operation a charcoal poultice was applied, which soon arrested the inflammatory process. December 10th, the arm

was about well. January 16, 1875, there was a note to the effect that no deformity was arising. February 20th, the spinous process of the first lumbar was observed to be more prominent than that of the other vertebræ. April 7th, there was a large unhealthy-looking scab over the site of the vaccination which was made in October last. April 22d, the angle of curvature was well marked. May 5th, examination pursuant to removal. General health fair; stands erect, and walks with ease, scab of old vaccination disposed to heal; spinous processes of first and second lumbar vertebræ quite prominent, and there is occasional epigastric pain.

The above notes I have copied from the hospital case-book. The history was taken by one comparatively inexperienced in such work, and, from the absence of some negative points which should have been observed and noted, I hesitate to accept the history as perfectly reliable. All the more do I doubt the reliability when I find the peculiar course the vaccination took. I feel assured in believing that the disease of the spine was not of sufficient intensity to cause the strumous diathesis which was manifest through the peculiar type of vaccinia. The element of pertinacity was certainly present, and, to my thinking, this vaccinia was proof that an inherited or acquired diathesis had been overlooked in the history.

Case IV.—Acute synovitis of left hip. Lawrence McI., aged eleven, was placed in the hospital by his grandmother, August 3, 1876. From the old lady the history was obtained, and is as follows: Family history good; five children in the family, all living, and all, save subject of present notes, in good health. The hygienic surroundings are moderately good. Health during infancy was good, has been vaccinated, has had rubeola and pertussis, with no sequelæ. One week ago, without any known provocation, he suddenly complained of weakness, tenderness, and pain, in the left hip, which symptoms have increased to the present time.

He is of fair complexion; dark hair, and brown eyes; is fairly nourished. Stands with the left hip advanced, semi-flexed and everted, and walks with a decided limp. The left natis is broadened, considerably tumefied, and there is marked tenderness on pressure over the trochanter. The superficial

inguinal ganglia are enlarged. Thigh can be extended to an angle of 165 degrees without tilting the pelvis. There is limited motion at the joint, but any attempt to flex is opposed by muscular resistance, ad and ab-duction being likewise opposed. No shortening, and no atrophy. Pain is complained of when the articular surfaces are approximated. The diagnosis was made, as is stated above, and on the day following a more thorough examination was made. The surface-temperature on left side over the trochanter was 2° *lower* than that at same point on right side. Measurement around groin and over trochanter for the right side was fifteen and a half inches, while on the left side it was seventeen and a half; from coccyx to anterior superior spinous process, right side eight inches, left side nine. A blister 4×4 was applied at bedtime.

August 12*th*.—The blistered surface was poulticed with flaxseed meal on the following morning, and renewed every six hours for three days, then dressed with simple dressings until healed. There is one and a half inch difference now in the size of the nates, as measured around groin and over trochanter.

August 20*th*.—The swelling has perceptibly diminished; the boy is free from pain, and the limb is almost straight.

August 28*th*.—Walks with only a very slight limp. No resistance to flexion, extension, ab or ad-duction. There is no difference in size or in length of limbs. The measurements over trochanter and around groin on both sides are identical; those from coccyx to anterior superior spine, on both sides, likewise identical. The surface-temperature over left trochanter is ½° higher than that over left. There is still a shade of flattening.

October 2*d*.—The contour of the natis is to all appearance restored. There is no pain, no tenderness, no limp.

October 13*th*.—Discharged cured.

If the case last recorded be non-strumous, as I have reason to believe, in view of the course taken by the disease, I think those who hold to the traumatic origin of joint-disease can with propriety claim this one—i. e., if we had any evidence that a fall could be found to have occurred.

To sum up from Table IX. Of 596 cases analyzed with

reference to hereditary and 614 with reference to an acquired diathesis, I have succeeded in finding only *one* case of which it can be surely said there was no struma complicating. The three cases of spinal disease which I have reported may be classed by some as non-strumous, but I feel sure others will differ in their opinion.

I think I am prepared to answer the question now, as propounded by Dr. Sayre. Whatever other observers may have experienced, I feel warranted in stating, from a careful study of the cases whose analysis is here recorded, that true chronic joint-disease *cannot* occur in a non-strumous child. I believe that a *slight* injury often develops or acts as exciting cause, but never induces the disease unless a *predisposing cause* be present. I am not prepared, with Prof. Gross, to admit that that predisposing cause is always a transmitted tubercular diathesis; but I am firmly convinced that it lies in a morbid condition, which is either hereditary and permanent, or acquired, whether temporary or permanent. My classification of traumatism and non-traumatism is a bad one, but I chose it to bring out in bolder relief the facts which my statistics afford.

Are Chronic Joint-Diseases ever the Cause of the Strumous Diathesis?—Mr. T. Holmes, in his "Surgical Treatment of Children's Diseases," on pages 337, 338, after speaking of the causes of struma, makes the following observation:

"I believe, also, that protracted suppuration is an efficient cause of tuberculosis, and that many of the exhausting joint-diseases which prove fatal ultimately by phthisis, and are therefore set down as strumous, were really themselves the cause, and not the effect, of the tuberculous diathesis." From a careful reading of Mr. Holmes's remarks on struma, I came to the conclusion that he made only a *difference in degree* between the strumous and the tuberculous diathesis. Dr. Sayre holds, I believe, to substantially the same doctrine. That a joint-disease long continuing does sometimes develop struma in a child already predisposed, I have not the slightest doubt; but that it *causes* the diathesis *de novo*, as scarlatina causes it, or as rubeola or pertussis causes it, I entertain grave doubts. As bearing on the question, I have selected such cases as have been under observation during a period varying between six

months and six years, and have analyzed them closely, including in my table those wherein amyloid degeneration developed, wherein adenia, tuberculous meningitis, recurring naso-facial erysipelas, chronic recurring phlyctenular conjunctivitis, scorbutus, diseases of other joints and of the bones, and several types of vaccinia occurred. Three hundred and twenty cases were found for observation, and of this number two hundred and thirty-six gave no evidence of strumous disease in any other locality. Manifestations undoubtedly strumous were observed in eighty-two, while in fifty-two of the two hundred and thirty-six there was exhaustion in its various degrees. Before giving the different types of struma as developed while the patients were under observation, I propose to show what number of those wherein exhaustion was a prominent feature actually developed any strumous signs in localities or tissues other than the joints; also, to show whether such developments were due to the exhaustion, or to other well-known causes or conditions which were present, and which were noted in the histories.

Those fifty-two cases, I may as well state, were cases in which long-continued suppuration existed, and in which exhaustion pure and simple was the only sign noticed. Seventeen of these were in the hospital from six to twelve months, and fifteen I saw twice a day during the whole of their hospital sojourn; twenty-one were in the hospital from one to two years, and all of them, likewise, I saw twice a day. Eight were under the same daily observation for periods varying between two and three years. The remaining six were under observation from four to five years, one as an out-door patient, the others as in-door patients. I am thus specific lest some one may say that strumous manifestations may have appeared and soon disappeared, no note having been made. I have kept faithful records of the cases, and such can be found at any time on the hospital case-books. Furthermore, twenty-three of the fifty-two died from exhaustion induced by the long suppuration, and no struma in other localities occurred. I can with assurance, then, state that in fifty-two cases of suppurating joint-disease this diathesis was not manifest extrarthritic.

A further analysis of the fifty-two cases of exhaustion gives

the following result: In sixteen, no attempt was made by the historian to trace any hereditary diseases in either member of the family, or the connection of any of the diseases of infancy with the joint-disease; in thirty-six, a predisposing cause was found either in a transmitted or an acquired diathesis, or in both. Twenty-seven gave hereditary diseases in the parents, and evidence of acquired struma was found in twenty-five. The hereditary diseases were found more frequently in the father than in the mother, in the proportion of about two to one. Evidences of strumous disease were found in other members of the family in fourteen instances. In every case, then, exclusive of the sixteen in which no attempt was made to ascertain the existence of a possible predisposition, a cause, in a greater or less degree adequate, was found for the severity of the disease; in other words, a strumous diathesis, either hereditary or acquired, could with reasonableness be predicated of every case.

TABLE X.—Showing what Number of 320 Cases of Joint-Disease, thus analyzed, developed Strumous Diseases in Other Parts of the Body.

	Amyloid Degeneration.	Adenia.	Recurring Naso-Facial Erysipelas.	Tubercular Meningitis.	Recurring Phlyctenular Conjunctivitis.	Scorbutus.	Bone-Lesions and Multiple Arthritis.	Severe Vaccinia.	Totals.
Number	22	18	13	10	7	5	4	3	82
Number where hereditary diseases were found	12	14	11	8	4	1	3	2	55
Number where an acquired diathesis was found	20	12	8	7	5	4	4	2	62
Number where neither family nor personal history was sought	3	2	2	1	1	1	..	..	10
Number where either hereditary or acquired diathesis was found	19	16	11	9	6	4	4	2	71
Percentage where diathesis was found	86½	89	84½	90	85¾	80	100	67	86½

From the table just given, the different tissues which were attacked by the strumous disease are shown in the first column; and, before treating of these seriatim, I shall give the number of cases in which exhaustion from prolonged suppuration preceded the development of the strumous diathesis in the tissues and localities noted in my table. A certain number were free from any congestion abscess even, and there was no evidence of any suppuration at all. This number I shall also give, with remarks.

Of the eighteen cases affected with strumous disease of the lymphatic ganglia, such as I have classed as cases of adenia, only one suffered from any exhaustion consequent on suppuration prior to the glandular infiltration. One has recently died of phthisis, having developed multiple joint-disease before any marked phthisical signs were discovered. The family history of this case was not obtained with sufficient accuracy to warrant the assertion that it was very good. The father I knew to be dead—of what, I did not know—while the mother presented a face and expression typically strumous. The hygienic surroundings prior to the admission of the patient into the hospital were by no means such as could be desired. Notwithstanding, from my observation of the case, from the known profuseness of the suppuration, and from the length of time the suppurative process existed prior to any signs directing my attention to the pulmonary organs, I felt convinced that this afforded a fine illustration of the development of *phthisis* from prolonged *strumous* suppuration. It will be seen, from the advised use of the adjective "strumous," in the sentence just completed, that I regarded the case as unquestionably such prior to the invasion of the pulmonary disease which proved fatal. In the thirteen cases with recurring nasal and facial erysipelas as the exponent of the strumous diathesis, there was no suppuration in nine; the suppuration was very slight and not at all exhaustive in two, while in two there was prolonged suppuration antedating the first appearance of the lesion under consideration, and in both of these two the family histories were sufficiently poor to account for a transmitted tubercular diathesis. Consumption was found on both sides, and an exanthem as an exciting cause of the

joint-disease in one; while in the other the mother's family was decidedly consumptive, and an acute necrosis in three or four different localities was the exciting cause of the joint-diseases.

There was no suppuration in five cases dying of tubercular meningitis, but there was some excitement from the pain incident to the disease of the joint in four of this number, while in one there was no severe pain at any time. In five, long-continued suppuration produced exhaustion, which was thought to have been the exciting cause of the meningeal disease; but in one of the five pertussis, severe in character, occurred just prior to the prodromatous period of the fatal tubercular meningitis, and could with propriety have been considered as the cause. One case recovered under the administration of heroic doses of ergot, and one was complicated with localized cerebritis as proven by autopsy. Hereditary predisposition was strongly suspected in one of the remaining two (history not obtained), and found in the other. It was likewise found in the remaining three of the five. Among the cases in which strumous disease developed as chronic and recurring phlyctenular conjunctivitis, four occurred prior to any suppuration, and in three there was no suppuration while under observation. The five cases illustrating the scorbutic diathesis did not suffer from exhaustion of any kind; in fact, no suppuration was at any time present prior to the development of the diathesis. Other joints became involved in four instances, but no suppuration preceded this occurrence. Of the three who suffered from an unusually severe and chronic vaccinia, two had been the subjects of suppurative disease of the joints, while one of these even bore marks of struma about the cervical region and in the eyes, reported to have antedated the suppuration, and in the other consumption was found on the mother's side, rheumatism (chronic articular) on the father's. One case *seemed* singularly free from any hereditary or acquired taint, as also from any suppuration. This is Case III., reported in another portion of this paper, page 30.

The whole number of the cases of amyloid degeneration—twenty-two—suffered a more or less degree of exhaustion from prolonged suppuration.

To resume, then. Of the number analyzed with reference to the question of exhaustion from prolonged suppuration causing the strumous diathesis, eighty-four were found to have been the subjects of exhaustion in various degrees of severity. In fifty-two no strumous manifestations in other portions of the body than the joint thus affected occurred during the period of observation; in nine there was strumous disease elsewhere manifest, but the facts go to show that the predisposition existed prior to the suppuration and exhaustion, and had actually shown itself in some instances; hence the disease, or diathesis, was simply *developed*, and not caused *de novo*, by the exhaustion. In the twenty-two cases of amyloid degeneration of the liver and kidneys, exhaustion was the exciting cause in every one; but from the table it will be seen that in nineteen out of the twenty-two an efficient predisposing cause was found, while in the remaining three no such predisposing cause was sought. If amyloid disease be strumous, it may be interesting to know why this peculiar type of struma should occur—what factors are necessary to its production. I have often wondered why some cases of joint-disease could suppurate profusely for months, and for years even, and no amyloid changes in liver or kidneys occur. We have only twenty-two of the eighty-four cases of exhaustion, or about twenty-seven per cent., terminating in this lesion; and the suppuration in the twenty-two was not greater, and did not extend over a longer period, than that of the fifty-two of uncomplicated exhaustion. It is a significant fact, that in every case of amyloid disease where a family history was sought—twelve in number—an hereditary disease was found; and this hereditary disease—a fact still more significant—was found to be pulmonary consumption in ten out of the twelve. The consumption was in the father in five instances, in the mother in six, being found in both father and mother once. One history of the two remaining gave chronic rheumatism in the father and in the mother, while strumous diseases were found in other members of the family: the other gave habitual drunkenness in the father, and probable consumption in the mother, a wretched hygiene being found as an element of no little importance. In seven no family history was obtained, but the personal history gave an exan-

them as causing or developing a strumous diathesis, associated with a bad hygiene in two, unassociated with a bad hygiene in one. Bad hygiene was found to have existed in a highly probable causative relationship to the joint-disease, and its severity, in five cases, one of which was furnished with additional evidence of struma, by the existence of such diseases in other members of the family. In no one of these cases was even a personal history obtained. Hence the data, for conclusions are very imperfect so far as the last five are concerned; in fact, the whole ten, where no family history was obtained, are valuable only so far as their harmlessness to a theory is concerned. Amyloid changes have been observed in the glandular tissues almost exclusively. The theory to which I have referred is, "The lymphatic diathesis is in most cases congenital, and transmitted from generation to generation."[1]

I believe that, if Billroth had asserted that such was the fact in *every case*, his assertion could not have been disproved.

The question, then, raised at the beginning of this branch of my subject, "Are chronic joint-diseases ever the cause of the strumous diathesis?" cannot be answered *affirmatively* by the history of any one of the three hundred and twenty cases I have had under observation. That chronic joint-diseases sometimes develop strumous disease in other localities in an individual in whom a predisposition already exists, twenty-two of my cases abundantly prove. Yet, as my analysis furnishes proof incontestable that the joint-disease itself is strumous, it remains for other investigators to prove that chronic joint-diseases, by any amount of suppuration, ever *develop* even a strumous diathesis. *I cannot prove the assertion.*

To a consideration of some of the complications of joint-disease, or, rather, to some of the lesions which furnish corroborative evidence of the existence of a strumous diathesis, my attention shall now be directed. From Table X. it will be observed that eighteen cases of adenia were found to have developed during the course of the joint-disease. Two of these were not investigated as to the possible existence of any hereditary or acquired diathesis, and consequently are value-

[1] Billroth's "Surgical Pathology." Translated by Hackley. New York, 1874. P. 390.

less as data. Of the sixteen investigated, every one gave presumptive evidence of a diathesis either transmitted or acquired, and in fourteen hereditary diseases were found in the family, while in eleven the exhaustive diseases of childhood stood in a causative relationship with or without the influence of heredity. The hereditary diseases were found in the father six times, in the mother eight times, and strumous diseases in other members of the family three times.

The ten cases of tubercular meningitis were examined with reference to heredity, and the exanthemata in every instance but one, and in the whole nine thus examined not one gave a clear record. In eight, consumption was found in the father four times, in the mother three times, both father and mother once; syphilis was found in the father once, and in the mother, same case, a scrofulous disease was unmistakably present; and heart-disease occurred in the father in one instance. A strumous diathesis was found to have been developed by the diseases of infancy in seven instances, this number, of course, including those with and without hereditary influence. From my cases it can be almost conclusively proven that tubercular meningitis is a transmitted disease.

With regard to the occurrence of a recurring naso-facial erysipelas, Dermatology—so I am informed by one or two of my dermatological friends who are regarded as authority—does not recognize such a lesion. This has been observed time and again in thirteen of our joint-cases, and I have for a long time regarded the affection as typically strumous. This subject I shall elaborate at a subsequent time. While studying the subject clinically, however, I have seen an abstract of a thesis by M. J. Courbon, Paris, 1873, in which thirteen cases of strumous recurrent facial erysipelas are reported. Hufeland [1] speaks of "the nose itself a little swelled, red, and shining." [2] This, however, hardly characterizes the affection, and a reference to the recurrency is not made.

In the thirteen cases of Table X., a history neither family nor personal was obtained. Of the eleven whose history was obtained, hereditary diseases were found in every instance,

[1] "Half-Yearly Abstract," vol. lviii., page 86.

[2] "On the Scrofulous Disease," page 74.

and previous strumous manifestations developed by infantile diseases in eight of this number. The father was the subject of hereditary disease in seven, the mother in six, and both in two instances. Other members of the family bore additional evidence three times.

A recurring phlyctenular conjunctivitis was observed in seven of the cases analyzed, and in one no history was sought. All of the six whose history was sought, gave heredity and diseases of childhood as possible factors in the production of the diathesis. Hereditary diseases were found in four, the father being the subject in only one. An adequate cause for five was found in the exanthemata.

The cases in which a strumous diathesis was shown by an unusually severe vaccinia have already been discussed, and demand no further analysis in this connection.

Of the four cases complicated by disease of the shaft of the bone and by multiple arthritis, an adequate predisposing cause was found in every one. A few words relative to the scorbutic diathesis as coexistent with the strumous. Dr. James Knight, among modern writers, refers to the scorbutic in contradistinction to the strumous diathesis, as follows:

"That it [morbus coxarius] occurs in scrofulous children, not a doubt can be entertained; but it is often observed in individuals who do not present a single indication of a strumous diathesis—if we confine the strumous diathesis to tubercular deposits involving the glandular and parenchymal tissues. In many patients laboring under morbus coxarius the scorbutic diathesis is decidedly indicated by spongy gums, mouth bleeding at nights, and aphthous condition of the mucous membranes, and no enlargement of the glands nor the most remote tendency to phthisis-pulmonalis in after-life. This condition may be considered as the 'strumous inflammation without tubercle' of some authors."[1] I have observed five such cases, i. e., cases in which a scorbutic element seemed to preponderate; but, as sufficient evidence was found for the predisposition to a strumous diathesis in four of the five whose histories were obtained, I cannot say that I have seen any who do not present a single indication of the strumous diathesis. These cases are

[1] "Orthopædia," page 258.

to me very interesting, and I had intended to incorporate complete histories of one or two, but space forbids. Dr. Knight has assured me, however, that some time soon he purposes writing a special paper on this subject.

Mortality.—To make my analysis the more complete, and as contributing what I know to be reliable statistical facts to a subject about which there are so many extravagant statements, I have taken five hundred and forty-five cases, with the full histories of which I am personally acquainted, and have constructed a mortality-table. This does not represent at all the mortality of the cases treated exclusively at the hospital. It includes both those who died while under treatment at the hospital, either as in or out-door patients, and those who came under the hospital treatment in different stages of the disease, remained an unsatisfactory period, and were removed to other institutions in many instances, and in other instances to the care of the family physician. Very many of this latter class of patients I have followed closely, recording all reliable information to make the histories as nearly complete as possible. Many of the cases not proving fatal have recovered in different stages of the disease; i. e., all disease is arrested with or without deformity, while on the other hand many still suffer, some in the second stage with abscess forming, and some in the third stage with suppuration more or less exhausting. A few have undoubted amyloid degeneration in progress, and a certain proportion are in such a condition as to make the prognosis grave. Still I have only recorded among the dead those whom I know to be dead, and none who were probably dying when last heard from. My experience with children has made me very skeptical about reports as to "impending death" and "can't possibly survive long." The tenacity with which some children cling to life is astounding. I know of children suffering in the exhausting stages of joint-disease, whose death has been daily looked for during a period of eighteen months. I have seen children whose life for an indefinite period seemed to hang on a thread, and yet that thread seemed as tough as an ocean-cable. I am digressing, however, but shall confine the rest of my remarks to the facts as recorded in the table.

TABLE XI.—Showing the Percentage of Deaths in 545 Cases.

	Hip.	Spine.	Knee.	Ankle.	Total.
Number analyzed	288	128	106	23	545
Percentage of deaths from disease itself	4½	10⅝	7½	8¾	6¾
Percentage of deaths from amyloid degeneration	4½	5½	2	9	4 1/17
Percentage of deaths from tubercular meningitis	1¾	2½	2	..	1¾
Percentage of deaths from disease itself and amyloid degeneration	9 1/16	16¼	9½	..	10¾
Percentage of deaths from disease itself, amyloid degeneration, and tubercular meningitis	10¾	18¾	11½	..	12¾
Percentage of deaths from other diseases	1¾	2½	..	..	1½

The deaths from amyloid degeneration, it will be seen, are first tabulated separately, and then in connection with the deaths from exhaustion simply, or from the disease uncomplicated. When it is remembered that all the cases in which the amyloid changes developed were subject to exhaustion from prolonged suppuration, a sufficient reason will occur to any one for the grouping of the two together.

The mortality from tubercular meningitis is likewise confined to a separate column; but as all the cases, save one, occurred under such circumstances as to lead me to believe that the joint-disease, either from the irritation induced by frequently-recurring paroxysms of pain, or from suppuration, acted as an exciting cause of the tubercular meningitis, I have also combined the deaths from this source with those from the disease itself, and from amyloid degeneration. The exceptional case to which reference has been made was one in which much suppuration had occurred, but had subsided at a period too remote from the invasion of the meningeal disease to stand in a causative relation. Pertussis, as I have mentioned in another portion of my paper, seemed to stand in this relation in this particular case. There is one other case which I did not except, seemingly excited by an attack of varicella; but, as the child was suffering from much pain incident to the

joint-disease, I therefore regarded the varicella as coincidental.

The deaths from diseases in no way connected with the joint-disease are simply given to complete the table. Before proceeding to a summary, I wish to acknowledge my indebtedness to the kindness of our clinical clerk at the hospital, for the mathematical execution of the tables herein embraced.

Summary.—When I began my paper, I stated that I had no theories to establish, nor had I. I cared not whether my analysis resulted in sustaining the theory of traumatism or that of struma. I made the division of traumatism and non-traumatism simply to better study my subject. I find, now, that I did well not to put in antithesis traumatism and struma. That would have been very unscientific, and altogether impracticable. The cases whose histories I have studied and herein tabulated go to confirm the old theory of a strumous diathesis being at the base of all chronic joint-disease. I find that ninety-nine cases out of eight hundred, or 11.50 per cent., were developed prior to the second year, and five hundred and fifty-nine, or sixty five per cent., prior to the fifth year; that of five thousand four hundred and sixty-one cases, fifty-three and one-quarter per cent. were males, and forty-six and one-quarter per cent. were females; that the hip-joint was the more frequently affected, the percentage being about forty-two per cent. Three hundred and fifty-nine cases were recorded as traumatic; i. e., a fall or other injury was found, on the testimony of the parents, to have preceded the invasion of the disease in such an intimate relationship as to be considered the exciting cause. Percentage, forty-one and three-quarters. Ninety-seven of this number were very doubtfully traumatic, the percentage then being reduced to twenty-nine and one-third. In four hundred and eighty-three cases, no fall or injury as an exciting cause could be found, and were classified as non-traumatic. Percentage, fifty-six and one-fifth.

Of the whole number supposably traumatic, seventy-two per cent. were found to have given in their family histories some one or more of the hereditary diseases, sufficiently marked to account for a transmitted diathesis. Twenty-two per cent. gave personal histories of some one or more of the

diseases of childhood occurring with severity in such relationship with the invasion of the disease as to be considered in the light of exciting causes, apart from any influence of traumatism.

Fifty-seven per cent. of the cases traumatic gave, then, in the family or the personal histories, unquestionable evidence of either an hereditary or an acquired diathesis, answering to that generally called strumous. Twenty-three per cent. of these cases were not investigated as to family or personal history. Twenty per cent. seemed to merit the predication of "nothing found," but, on closer analysis, only *one* case remained out of three hundred and fifty-nine whose histories were recorded, and even this could with propriety be followed by a note of interrogation. It is in evidence, then, that every case supposed to be traumatic, which gave a full and reliable history, was *vulnerable by a predisposition*, and was simply induced by the *traumatism as an exciting cause*.

In seventy-three per cent. of the non-traumatic cases, some one or more of the hereditary diseases were found in the family history, and consequently presumptive evidence of a transmitted diathesis could not be excluded. Thirty-eight per cent. gave in the personal history some one or more of the diseases of childhood, known to possess the power of causing or developing the strumous diathesis, occurring at a period sufficiently near the inception of the joint-disease to stand in a causative relation. Fifty-nine per cent. gave in either family or personal history evidence of a transmitted or an acquired diathesis. Twenty-nine per cent. were not investigated as to family or personal history.

Twelve per cent. were, to first appearances, free from any hereditary or acquired diathetical influence, but, on more rigid analysis, there could be found only *two* cases out of four hundred and eighty-three, the histories furnishing reliable data, and one of these could not with justice be called a chronic joint-disease, while the other admitted of reasonable doubt as to admissibility in evidence. So, then, all the cases, traumatic and non-traumatic, gave, with the one or two possible exceptions above recorded, histories the facts connected with which proved conclusively the existence of a strumous *element*,

at least in the etiology, and established, as far as facts and figures can establish, the untenableness of the traumatic theory as generally understood. It was very gratifying to me, on the occasion of the reading of this paper before the County Medical Society of New York, to hear Dr. Lewis A. Sayre, who is regarded as the distinguished exponent of the traumatic theory, correct in forcible terms a wide-spread misconception as to his teachings. He stated that he had been reported as teaching that only healthy children could get joint-disease, while strumous children were exempt from it. This report he characterized as an unfounded misrepresentation. He further remarked that he believed a strumous child could the more easily get joint-disease, a fall or other injury being present as an exciting cause. From Dr. Hamilton, however, he exacted the admission that children in perfect health, and with a family and personal history absolutely free from taint, could acquire Pott's disease or hip-disease from traumatism. This admission I have not been able to verify by a closer study of my cases.

All this question of etiology, then, must have some practical bearing. The successful treatment of these maladies attended with so much suffering, productive of so much deformity, much of which is often irremediable, and the mortality—a lingering mortality, too—of which is between ten and twelve per cent.—the successful treatment, I say, is the prize to the attainment of which all our labors should tend. That many diseases essentially constitutional demand local treatment, no sane man will deny; and, with a proper understanding of the constitutional vice on which the local lesion depends for its existence, no sane man will assert that local treatment alone will meet all the indications.

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